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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,893	08/27/2002	Robert Anthony Fusaro JR.	120581	7971

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GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH CENTER
PATENT DOCKET RM. 4A59
PO BOX 8, BLDG. K-1 ROSS
NISKAYUNA, NY 12309

EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/064,893	Applicant(s) FUSARO ET AL.	
	Examiner Katherine A. Bareford	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers *claim 2 is canceled*

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment of November 7, 2003 has been received and entered.

Specification

2. The title of the invention is now descriptive after the amendment of November 7, 2003.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. The rejection of claims 1, 7-8 and 11-16 under 35 U.S.C. 103(a) as being unpatentable over Wolkers et al (US 2003/0082297) in view of French 2 527 891 (hereinafter '891) is withdrawn due to applicant's amendments to claim 1 filed November 7, 2003. .

6. The rejection of claims 1, 5-7, 10-13 and 15-16 under 35 U.S.C. 103(a) as being unpatentable over Hasz et al (US 6355356) in view of French 2 527 891 (hereinafter '891) is withdrawn due to applicant's amendments to claim 1 filed November 7, 2003.

7. Claims 1, 3-4, 7-8 and 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolkers et al (US 2003/0082297) in view of French 2 527 891 (hereinafter '891) and EP 490 882 A1 (hereinafter '892).

Wolkers teaches a method for protecting an article from degradation. Paragraph [0011]. A substrate is provided. Paragraph [0024]. A plasma spraying apparatus can be provided. Paragraphs [0028] and [0033]. The plasma spraying apparatus can be operated to deposit at least one coating on the substrate. Paragraphs [0028] and [0033].

Claim 7: the substrate can be a component of a gas turbine assembly. Paragraphs [0002], [0013] and [0024].

Claim 8: the component can be removed from a turbine assembly prior to the coating treatment. Paragraphs [0024] – [0025].

Claim 11: the coating can be a metal or a ceramic. Paragraphs [0028] and [0031].

Claim 12: the coating can be a bond coat material. Paragraph [0028].

Claim 13: the bond coat material can be an M Cr Al Y material, where M is Fe, Ni or Co. paragraph [0030].

Claim 14: the bond coat material can also be an aluminide compound. Paragraph [0030].

Claim 15: the coating can be a thermal barrier coating. Paragraph [0031].

Claim 16: the thermal barrier coating can be a yttria stabilized zirconia. Paragraph [0031].

Wolkers teaches all the features of these claims except (1) the use of a plasma transferred arc apparatus that is set to a non-transferred arc mode for the coating, (2) operating the plasma transferred arc (PTA) apparatus using a pilot arc power supply to provide the coating (claims 1, 17), and (3) using the PTA apparatus in a transferred arc mode to form a welded region on the substrate prior to coating (claims 3-4, 17). Wolkers does teach that prior to applying the coating, the substrate can be treated with a welding process to repair the blade. Paragraph [0027]. After the welding process, coating can be applied over the welded area by a plasma process. See paragraph [0028].

However, '891 teaches that a plasma gun can be provided. Abstract. The gun can be provided to operate with a non-transferred arc mode or a transferred arc mode for different coating or welding conditions. See the abstract.

'882 teaches an arc plasma torch. Column 3, lines 1-10. The plasma torch can be started through a contact method, which forms a pilot arc. Column 3, lines 1-10. This pilot arc provides a non-transferred arc operational mode of the torch. Column 3, lines 10-25 and column 6, lines 1-20. The torch can be operated in the non-transferred mode or switched to a transferred arc mode. Column 3, lines 10-25 and column 6, lines 1-35.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wolkers to use a plasma gun that can be operated in either transferred arc or

non-transferred arc mode, and to operated the gun in a non-transferred arc mode as suggested by '891 with an expectation of desirable coating results, because Wolkers teaches a coating treatment using plasma spraying, and '891 teaches that a desirable plasma spray gun allows for operation in the transferred arc or non-transferred arc mode depending on the coating conditions. It would further have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wolkers in view of 891 to use a plasma spray torch that can operate in a non-transferred arc mode using a pilot arc or operate using a transferred arc mode as suggested by '882 in order to provide an efficient and desirable coating process, because Wolkers in view of '891 teach a processing operation that involves welding and coating treatments and that it is known to use plasma spray guns that can operate in either transferred and non-transferred arc mode to provide welding and coatings, and '882 teaches a desirable method of providing a plasma torch that can easily switch between non-transferred and transferred mode, thus efficiently allowing multiple treatments to be done with one apparatus. One of ordinary skill in the art would perform routine experimentation to optimize which treatment (coating or welding) should be performed in which mode (transferred or non-transferred) based on the gas turbine blade substrate and the amount of welding and coating to be done. This would provide the claimed pattern of transferred welding followed by non-transferred coating.

8. Claims 1, 3-7, and 10-13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasz et al (US 6355356) in view of French 2 527 891 (hereinafter '891).

Hasz teaches a method for protecting an article from degradation. Column 2, lines 25-60. A substrate is provided. Column 3, lines 10-35. A plasma spraying apparatus can be provided. Column 5, lines 55-60 and column 8, line 65 through column 9, line 5. The plasma spraying apparatus can be operated to deposit at least one coating on the substrate. Column 5, lines 45-60 and column 8, lines 45-68.

Claim 5: the substrate can be a metal. Column 3, lines 10-20.

Claim 6: the substrate can be a nickel or cobalt based alloy. Column 3, lines 10-40.

Claim 7: the substrate can be a component of a gas turbine assembly. Column 3, lines 35-40.

Claim 10: the coating material can be a powder. Column 6, lines 1-10.

Claim 11: the coating can be a metal or a ceramic. Column 5, lines 45-60 and column 8, lines 45-68.

Claim 12: the coating can be a bond coat material. Column 5, lines 45-60.

Claim 13: the bond coat material can be an M Cr Al Y material, where M is Fe, Ni or Co. Column 5, lines 45-55.

Claim 15: the coating can be a thermal barrier coating. Column 8, lines 45-68.

Claim 16: the thermal barrier coating can be a yttria stabilized zirconia. Column 8, lines 45-68.

Hasz teaches all the features of these claims except (1) the use of a plasma transferred arc apparatus that is set to a non-transferred arc mode for the coating, (2) operating the plasma transferred arc (PTA) apparatus using a pilot arc power supply to provide the coating (claims 1,

17), and (3) using the PTA apparatus in a transferred arc mode to form a welded region on the substrate prior to coating (claims 3-4, 17). Hasz does teach that prior to applying the coating, the substrate can be treated with a welding process to apply a braze foil. Column 4, lines 40-55 and column 30-45. After the welding process, coating can be applied over the welded area by a plasma process. Column 5, lines 40-55.

However, '891 teaches that a plasma gun can be provided. Abstract. The gun can be provided to operate with a non-transferred arc mode or a transferred arc mode for different coating or welding conditions. See the abstract.

'882 teaches an arc plasma torch. Column 3, lines 1-10. The plasma torch can be started through a contact method, which forms a pilot arc. Column 3, lines 1-10. This pilot arc provides a non-transferred arc operational mode of the torch. Column 3, lines 10-25 and column 6, lines 1-20. The torch can be operated in the non-transferred mode or switched to a transferred arc mode. Column 3, lines 10-25 and column 6, lines 1-35.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hasz to use a plasma gun that can be operated in either transferred arc or non-transferred arc mode, and to operated the gun in a non-transferred arc mode as suggested by '891 with an expectation of desirable coating results, because Hasz s teaches a coating treatment using plasma spraying, and '891 teaches that a desirable plasma spray gun allows for operation in the transferred arc or non-transferred arc mode depending on the coating conditions. It would further have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hasz in view of 891 to use a plasma spray torch that can operate in a non-transferred arc

mode using a pilot arc or operate using a transferred arc mode as suggested by '882 in order to provide an efficient and desirable coating process, because Hasz in view of '891 teach a processing operation that involves welding and coating treatments and that it is known to use plasma spray guns that can operate in either transferred and non-transferred arc mode to provide welding and coatings, and '882 teaches a desirable method of providing a plasma torch that can easily switch between non-transferred and transferred mode, thus efficiently allowing multiple treatments to be done with one apparatus. One of ordinary skill in the art would perform routine experimentation to optimize which treatment (coating or welding) should be performed in which mode (transferred or non-transferred) based on the gas turbine blade substrate and the amount of welding and coating to be done. This would provide the claimed pattern of transferred welding followed by non-transferred coating.

9. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolkers in view of '891 as applied to claims 1, ³~~4~~, 7-8 and 11-17 above, and further in view of Legros (US 5152058).

Wolkers in view of '891 and '882 teaches all the features of these claims except the in situ treatment of the turbine component.

However, Legros teaches that when repairing turbine blades, it is desirable to perform the repair on the blades in situ, i.e. while they are connected to the rotor. See column 1, lines 1-20 and column 2, lines 15-30. The various machines for repair are positioned to repair the blades in situ. See column 2, lines 25-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wolkers in view of '891 and '882 to provide in situ treatment of the turbine blades as suggested by Legros in order to provide an efficient and desirable coating process, because Wolkers in view of '891 and '882 teach a processing operation that involves welding and coating treatments to repair turbine blades, and Legros teaches that it is desirable to perform repairs in situ for more efficient treatment timewise and to prevent further damage to the blades.

Response to Arguments

10. Applicant's arguments filed November 7, 2003 have been fully considered but they are not persuasive.

Applicant's Arguments

Applicant argues that the claims as amended require that the PTA apparatus is operated using a pilot arc power supply to provide the coating, which the Examiner has cited '882 to teach. However, according to applicant, nothing in '882 suggests the use of a pilot arc power supply in operating the torch in non-transferred mode. In describing the general operation of the torch in columns 5-6, the reference merely refers to a power supply and further that a switch or relay is used to cut power to the pilot arc circuit when the non-transferred mode is to be discontinued, and as such it provides no more teaching or suggestion that the reference to '891, where a torch is described as capable of use in both transferred and non-transferred modes. Neither of these references, or any other supplied by the Examiner, suggests operating the torch in pilot mode

using a separate power supply ^{for} ~~or~~ transferred and non-transferred modes, which is clearly described in the present application.

The Examiner's Response

The Examiner has reviewed applicant's arguments, however, the rejection is maintained. As worded, as to the power supply features, the claims merely require that a coating be deposited on a substrate using the PTA apparatus in a non-transferred arc mode "wherein said PTA apparatus is operated using a pilot arc power supply" (claim 1) (claims 17 and 18 are similar). '882 clearly teaches that a power supply is used to provide power to the PTA apparatus so it can be operated in a pilot arc, or non-transferred arc mode. See column 5, lines 10-15, column 6, lines 1-30. '882 also indicates that the torch may be used in the non-transferred mode (where power is supplied from the described power supply) or it can be switched to a transferred arc mode. This teaching provides all the features needed by the claims as to providing a pilot arc power supply to operate the PTA apparatus in a non-transferred mode. Applicant argues that neither '882 or the other references suggests operating the torch in pilot mode using a separate power supply ^{for} ~~or~~ transferred and non-transferred modes, however, such a feature is not claimed. No features of the power supply for the transferred arc operation are claimed. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion


11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:30 - 4:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


KATHERINE A. BAREFORD
PRIMARY EXAMINER
GROUP 1400-1700